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Environment Accounts and Statistics Division

Waste Management Industry Survey Business and Government Sectors 1996



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**Waste Management Industry Survey
Business and Government Sectors, 1996**

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Inquiries about this publication and related statistics or services should be directed to:

System of National Accounts
Environment Accounts and Statistics Division
Statistics Canada
Ottawa, ON
K1A 0T6

Telephone: 1-613-951-0297
Fax: 1-613-951-0634
E-mail: environ@statcan.ca

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Symbols

The following standard symbols are used in Statistics Canada publications:

- .. figures not available
- ... figures not appropriate or not applicable
- nil or zero
- amount too small to be expressed
- x confidential to meet secrecy requirements of the *Statistics Act*

Preface

This report presents the results of the 1996 *Waste Management Industry Survey: Business Sector* and the 1996 *Waste Management Industry Survey: Government Sector*. These surveys gathered information on the financial characteristics and waste management activities undertaken by companies and local governments and other public waste management bodies.

These services included the collection and transportation of wastes and of materials destined for recycling, the operation of non-hazardous and hazardous waste disposal facilities, the operation of transfer stations and the treatment and disposal of wastes deemed to be hazardous.

The results of these surveys provide a picture of physical characteristics of waste disposal and recycling as well as financial and employment features of businesses and local governments that provide waste management services. The data have been analysed and presented at a provincial level wherever possible without compromising confidentiality.

This is the fourth time that the business sector of the waste management industry has been surveyed and the fifth time that the local government sector has been covered. However, this is the first time that both sectors have been reported under one cover as well as the first time that both disposal and recycling have been combined to provide not only a complete picture of disposal activities but a more complete picture of recycling activities.

Acknowledgements

The contributions of the respondents, industry groups and provincial environmental departments were critical to the successful completion of the surveys and are gratefully acknowledged.

This report was prepared by the Environment Accounts and Statistics Division under the direction of Claude Simard, Director and Alice Born, Chief, Environment Protection Accounts and Surveys. Data collection for the surveys was conducted by the Operations and Integration Division (J.F. Gosselin, Director) and the Environment Accounts and Statistics Division.

John Marshall, Analyst, Environment Protection Accounts and Surveys, Environment Accounts and Statistics Division, managed the project.

Major contributions to the project were made at various times by:

Diane Beauchamp

Alice Born

Wendy Gibbard

Anik Lacroix

Marc Lavergne

Bruce Mitchell

Hélène Trépanier

1 Overview of the Waste Management Industry

1.1 Introduction

Waste statistics are important sets of information used to inform and determine public policy and environmental practices. The Environment Accounts and Statistics Division of Statistics Canada plays an important role in measuring waste statistics for Canada. One of the Division's objectives is to develop a complete set of statistics on the management of waste.

There are two inter-related elements to this work, governments and other public organizations that provide or make provision for waste management services and private firms that supply these services. To supply the information needed to depict these two elements, two survey vehicles are utilized. One is the *Waste Management Industry: Business Sector Survey* and the other is the *Waste Management Industry: Government Sector Survey*. Both of these surveys gather financial and human resource (e.g., revenues, expenditures, employment) and physical (e.g., quantities of different types of waste disposed of or recycled) information about the waste management industry.

Waste management services undertaken by this industry include the collection and transportation of waste and materials destined for recycling or reuse, the operation of non-hazardous and hazardous waste disposal facilities, the operation of transfer stations, the operation of recycling facilities and the treatment of waste deemed to be hazardous.

Generally, there are two sources of waste management services. On the one hand, they can be provided directly by a public body, such as a local government (e.g. city, town, regional district) or a waste management board or commission whose purpose is to co-ordinate the provision of such services. For example, a number of local governments may agree to jointly administer a landfill or recycling facility (Text Box 1.1).

Private firms are a second source of these waste management services. Local governments may enter into contracts with these firms to provide certain waste management services or these firms may directly enter into such arrangements with clients other than local governments. For example, a region may contract out curbside waste and/or recycling services to a company and this same company may enter into separate agreements with apartment complexes or industrial operations. Recently, there has been a shift from public production of waste management services to the contracting of these services

from the private sector (Table 4.3). That is, more local bodies are foregoing the direct supply of waste management services and are instead contracting out more and more of these functions. It is anticipated that this trend will continue into the future and that future results from the waste management surveys will reflect this shift.

A second major point to be made about this industry is one that addresses its structure. The waste management industry in Canada is one that is characterized by a small number of very large firms. The largest 63 companies in terms of employment account for only 4% of the total number of firms, yet 56% of total full and part-time employment (Table 3.8) and 67% of total revenues (Table 3.1). There are 4% fewer companies in 1996 than there were in 1995 and concentration of revenues among the larger companies has increased during the same time period (Table 3.1). This indicates that the industry is becoming more heavily concentrated as larger firms continue to acquire smaller companies. As in the case of the shift in the method of service delivery, it is anticipated that this trend too will be reflected in future surveys.

In 1996, revenues of the business sector of the industry totalled \$2.7 billion. Operating expenses amounted to \$2.5 billion and capital expenditures were \$264 million. The 1 433 companies in the industry employed 19 351 persons (full and part time) across Canada.

Local governments, waste management boards and other public waste management bodies had current expenditures of \$1.1 billion in 1996 (Table 4.1). Forty-two percent of these expenditures were spent internally on the organization's own employees providing waste management services, 54% was paid to external contractors and 4% was allocated to other governments or government bodies providing waste management services (Table 4.2). Local governments and boards directly employed 7 924 persons (full and part-time) for the provision of waste management services (Table 4.6).

There were over 20.6 million tonnes of waste materials disposed of in publicly or privately owned and/or operated landfill sites or incinerators. This translates to 690 kilograms of waste disposed of for each Canadian. This represented a decrease from 730 kilograms per capita in 1994 (Table 2.1).

Text Box 1.1

Local Government and Other Waste Management Services Providers

For the purposes of this report, local government in Canada includes all government and quasi-governmental entities below the provincial or territorial level. Within this broad category, administrative functions are divided among municipalities, special purpose boards and local school districts. A further distinction is made between upper and lower tier municipalities. In this report, for the purpose of simplicity, the term local government is used to denote any of the following public organizations.

Upper-tier municipalities are those encompassing one or more local government entities, such as metropolitan corporations, regional districts, regional municipalities and counties (in Ontario and Quebec).

Lower-tier municipalities are typically those whose borders can lie within or outside the jurisdiction of another level of municipality. These lower tier municipalities can include cities, towns, villages, townships, rural municipalities, districts and counties, and some quasi municipalities, including local government districts and local improvement districts.

Other public waste services providers can come in a variety of forms, but as a rule consist of a group of local municipalities (usually at the lower tier level) who collectively provide a waste management service. A group such as this will typically oversee the contracting out of a specific service or set of services (e.g., the operation of a materials recycling facility) but will also sometimes provide a service themselves (e.g., the operation of a landfill).

wastes have not entered the waste stream but have instead been disposed of or otherwise treated before entering the stream, these wastes are not included in the estimates contained herein. Some information in this regard may be available where particular wastes are subject to reporting requirements as part of specific provincial or federal regulatory programs. For example, the disposal of some hazardous wastes must be reported by the generating company to Environment Canada.

While Statistics Canada does not collect data on the amounts of waste managed directly by the *generating* businesses or governments, it does collect information on the expenditures that businesses incur to manage this waste through the *Survey of Environmental Protection Expenditures* (Statistics Canada, 1998). Preliminary estimates indicate that, in 1996, businesses spent \$426 million on the purchase of waste management and sewerage services.

Finally, households often manage some waste materials themselves. Many households, for example, have backyard composters that handle at least a portion of home and garden organic waste. While the amounts of compostable materials handled through central composting programs are included in the report, the backyard component is not. Statistics Canada collected information on the number of households with backyard composting in the 1994 *Households and the Environment Survey* (Statistics Canada, 1995).

1.3 Defining waste and its components

Waste management activities take many different forms and involve many different participants. This presents challenges when trying to prepare an integrated picture of activities, including the total materials managed.

One common thread is that all the materials handled are *unwanted by their producer*. The unwanted materials may be by-products of a production process—fly ash from a furnace, for example. Alternatively they might be products, the inherent value of which has been consumed from the perspective of the current holder—for example, a newspaper that has been read or a package that has been opened and emptied of its contents.

Concepts and definitions in the waste management area are still evolving. The most common source of difficulty is in classifying types of waste. Strategies to compile waste statistics reflect the specific needs of statistical and analytical projects: by type (municipal solid waste, hazardous waste); by generator or by generating activity (residential, industrial, commercial, institutional and

1.2 Survey limitations

Results from the 1996 waste management industry surveys did not include the activities of wholesale trade companies whose *principal* source of revenue was the resale of recycled or previously used materials. This group includes scrap materials dealers as well as many other recyclers. Information on such activities is collected through the *Survey of Wholesale Trade*.

Neither waste management survey covers waste *directly* managed by the generator. For example, waste created by a pulp and paper mill or a smelter may be managed by the company on site or in another company-run facility without the assistance of separate service providers. Since the

construction and demolition projects) as well as by type of material. The differences in the terminology that the various respondents use can create many operational difficulties when surveys are in the field. In conducting the 1995 *Waste*

Management Industry Survey: Business Sector, valuable suggestions were made on how to refine the classifications and this was taken into account while developing the 1996 edition of the questionnaire (see Text Box 1.3 for definitions).

This report provides information on the physical tonnages, types and sources of waste and recyclable materials. It also looks at specific financial and employment characteristics of the business sector and the local government sector of the waste management industry. Finally, an explanation and outline of the surveys' design is presented as well as some notes on the methodology that was used to derive the estimates.

Text Box 1.2

Nunavut - Canada's Newest Territory

On April 1, 1999 the territory of Nunavut was officially established through the Nunavut Land Claim Agreement and the Nunavut Act.

The data presented in this Report do not reflect the 1999 Nunavut boundaries since all data refer to the period before April 1, 1999. Therefore, where data on the Northwest Territories are shown, these data refer to the **Northwest Territories (including Nunavut), as defined before April 1, 1999.**

Text Box 1.3

Definitions

Construction and demolition waste (C&D)

Includes waste materials from the construction and demolition of roads, bridges and buildings such as asphalt, concrete, rubble, wood, gypsum and metal.

Disposal facility

A facility at which waste is landfilled, incinerated or treated for final disposal.

Hazardous waste

Includes all materials designated as hazardous, due to its nature or quantity, and requiring special handling techniques as specified by the Transportation of Dangerous Goods Regulations (1985), The Canadian Environmental Protection Act (1988), The Basel Convention (1989) and the Export and Import of Hazardous Waste Regulations (1992).

Institutional, commercial and industrial (IC&I) waste

Includes materials from sources such as heavy and light industry, manufacturing, warehousing, transportation, retail and wholesale commercial activities, restaurants, offices, educational or recreational facilities, health and other service facilities.

Materials for recycling or reuse

Materials managed for processing into new products or cleaned and treated for reuse by other than the generator.

Preparing materials for recycling or reuse

Includes sorting, cleaning and reducing volume of recyclable or reusable materials.

Secure landfill

At a minimum, this is a landfill that accepts only specified waste and has controls in place (such as fencing and personnel) to monitor the types and quantities of waste that is placed in it. Often this term also denotes those landfills that have systems in place to separate waste and its leachate from the water table or to draw off leachate for treatment and disposal.

Tipping fee

A sum paid to the owner or operator of a disposal facility or a transfer station in return for accepting the material at the facility.

Transfer station

A facility at which wastes transported by vehicles involved in collection are transferred to other vehicles that will transport the wastes to the point of final disposal, recycling or reuse.

Waste

All materials unwanted by their generator. This includes all materials that are intended for recycling, treatment or disposal that are removed without, or with only nominal, remuneration to the waste generator.

Waste for disposal

All materials not wanted by their generator and which are discarded for management at waste disposal facilities (excludes materials destined for recycling).

2 Waste Disposal and Material Recycling

2.1 Disposal of waste

Non-hazardous waste

Six hundred and ninety-six local government and privately owned and/or operated landfills and 42 incinerators received 20.6 million tonnes of waste in 1996 (Tables 2.1 and 2.3). This represented 690 kilograms per capita, a 5% decline compared with 1994.

On a provincial basis, Nova Scotia had the lowest per capita disposal rate in the country while Saskatchewan and Alberta shared the highest rate. Provinces on opposite coasts saw the highest per capita drops in disposal from 1994 to 1996. Nova Scotia had the highest percentage drop in Canada (22%), followed by Newfoundland (20%) and British Columbia (18%).

Non-hazardous waste by source

Thirty-five percent of non-hazardous waste disposed of came from industrial, commercial and institutional sources. Residential, and construction and demolition sources accounted for 29% and 24% of total waste respectively (Table 2.2).

The industrial, commercial and institutional sector was the largest source of waste in all provinces except for Quebec and Manitoba where the residential sector was dominant.

Hazardous waste

Over 920 000 tonnes of hazardous waste were treated and disposed of in Canada in 1996. Of this amount, 82% was treated and disposed of in Ontario and Quebec. Nation-wide, 39% of hazardous waste was disposed of in a secure landfill (Table 2.4).

By material type, the most dominant materials specified were those listed as "other". That is, they were not included on the list that was supplied in the questionnaire. Respondents reported that these other materials included a variety of materials such as contaminated soils, electric arc dust, plumbing residues and a number of other hazardous materials. Since waste such as these (e.g., contaminated soils) can be much heavier than some of the other materials, it is understandable why this category was dominant in terms of tonnages. In addition, respondents reported that much of the material that was treated and disposed of was "mixed" and thus difficult to separate into distinct categories for reporting purposes. These "other" types of materials accounted for approximately 39% of the total hazardous waste treated and disposed of, by weight. Organic materials were reported as the second most common material (20%), followed by oils and greases (14%) (Table 2.5).

Table 2.1
Disposal of Waste ¹ by Province and Territory, 1996

Province/Territory	Waste disposed of		Waste disposed of	
	tonnes	persons	per capita 1996	per capita 1994
			tonnes per capita	
Newfoundland	372 324	553 206	0.67	0.84
Prince Edward Island	x	136 188	x	x
Nova Scotia	553 638	931 235	0.59	0.76
New Brunswick	505 957	752 995	0.67	0.76
Quebec ³	5 491 000	7 286 231	0.75	0.71
Ontario	6 913 786	11 100 876	0.62	0.67
Manitoba	947 884	1 134 346	0.84	0.84
Saskatchewan	900 210	1 019 459	0.88	0.91
Alberta	2 435 884	2 780 639	0.88	0.86
British Columbia	2 413 528	3 882 043	0.62	0.76
Yukon and Northwest Territories	x	99 508	x	x
Canada	20 598 088	29 676 726	0.69	0.73

Notes :

Figures may not add due to rounding.

1. Total amount of waste disposed of in public and private waste disposal facilities. Does not include waste disposed of in hazardous waste disposal facilities nor waste managed by the waste generator on site.

2. Statistics Canada, CANSIM matrices 6367 - 6379.

3. Figures are derived from the results of complementary surveys conducted by the province.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 2.2
Non-Hazardous Materials by Source and by Province and Territory, 1996¹

Province/Territory	Residential	Industrial, commercial and institutional	Construction and demolition	Hazardous	Sewage and sewage sludge	Total
Newfoundland	109 507	131 409	x	x	x	372 324
Prince Edward Island	x	x	x	x	x	x
Nova Scotia	184 546	210 001	114 546	x	x	553 638
New Brunswick	165 888	199 065	107 827	x	x	505 957
Quebec ²	2 341 450	1 329 450	1 820 100	..	..	5 491 000
Ontario	1 918 576	2 419 825	1 780 300	483 965	311 120	6 913 786
Manitoba	301 599	215 428	x	129 257	x	947 884
Saskatchewan	261 351	290 390	203 273	x	x	900 210
Alberta	543 935	875 026	520 286	354 740	141 896	2 435 884
British Columbia	731 372	833 764	672 862	117 020	x	2 413 528
Yukon and Northwest Territories	x	x	x	x	x	x
Canada	6 049 788	7 250 143	4 881 443	1 440 426	976 289	20 598 088

Notes :

1. Sources of waste disposed of derived from reported sources of waste collected and transported for disposal.
 2. Figures are derived from the results of complementary surveys conducted by the province.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 2.3
Waste Disposal Characteristics by Province and Territory, 1996

Province/Territory	Type of disposal		Type of waste accepted ¹		
	Incinerators	Landfills	Municipal ²	Construction and Demolition	Other ³
Newfoundland	x	36	50	22	8
Prince Edward Island	x	x	x	x	x
Nova Scotia	4	29	23	28	10
New Brunswick	-	17	19	13	x
Quebec ⁴	..	139	..	..	..
Ontario	x	120	104	94	27
Manitoba	-	78	63	53	16
Saskatchewan	-	73	64	55	23
Alberta	x	115	83	74	24
British Columbia	5	71	57	54	24
Yukon and Northwest Territories	x	x	x	x	x
Canada	42	696	481	408	143

Notes :

1. Number of facilities that accept waste from the specified sources.
 2. Municipal solid waste includes solid waste produced by the residential and the industrial, commercial and institutional sectors and excludes construction and demolition waste.
 3. Other waste includes mixed waste and that which could not be classified by the survey respondents.
 4. Figures are derived from the results of complementary surveys conducted by the province.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 2.4
Hazardous Waste Treated and Disposed of by Method of Disposal and by Region¹, 1996

Region	Treatment	Incineration	Secure landfill	Other	Total
Atlantic	62 260	470	-	-	62 730
Quebec	48 397	131 418	131 062	13 567	324 444
Ontario	136 883	65 257	211 865	12 603	426 607
Western	56 591	30 359	19 757	-	106 707
Canada	304 131	227 504	362 684	26 170	920 488

Note :

1. For reasons of confidentiality, Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick have been combined as an Atlantic region while Manitoba, Saskatchewan, Alberta, British Columbia and the Territories have been combined as a Western region.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 2.5
Hazardous Waste by Type of Material Treated or Disposed of and by Region¹, 1996

Region	Organic materials	Oils and greases	Heavy metal solutions	Inorganic materials	Pesticides and herbicides	PCB waste	Other	Total
tonnes								
Atlantic	43 277	403	17 500	-	-	1 100	450	62 730
Quebec	17 550	55 598	55 817	86 171	11	3 212	106 086	324 444
Ontario	87 620	63 388	50 232	8 534	320	3 873	212 640	426 607
Western	36 277	9 983	527	18 741	-	4 315	36 864	106 707
Canada	184 724	129 372	124 076	113 446	331	12 500	356 040	920 488

Note :

1. Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick have been combined as an Atlantic region while Manitoba, Saskatchewan, Alberta, British Columbia and the Territories have been combined as a Western region.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

2.2 Material recycling

Types of materials

Over 5 million tonnes of materials were prepared for recycling or reuse in 1996. Fifty-six percent of these materials were processed in Quebec while Ontario's share was 27%. "Other materials" (which include such items as soils, tires, textiles and construction and demolition materials) comprised 31% of the national total, paper products (including newsprint, boxboard and old corrugated cardboard) made up 30% and ferrous metals such as iron and steel, 23% (Table 2.6 and Text Box 2.1).

Sources of recyclable materials

Table 2.7 shows that 52% of all materials collected and transported for recycling or reuse originated from industrial, commercial or institutional sources. This was followed by construction and demolition sources (26%) and residential sources (18%). Three percent of the total came from hazardous materials.

Text Box 2.1

Notes on recycling data

The total number of tonnes of "other materials" prepared for recycling or reuse for the province of Quebec included 875 110 tonnes of construction and demolition materials. These are tonnages that are not explicitly included as part of the "other materials" tonnages for the rest of Canada. Thus, inter-provincial comparisons should be made with caution.

The above information on recycling and disposal tonnages should not be used to calculate "recycling rates". The recycling data include those materials that were processed for recycling or reuse at publicly or privately owned material recycling facilities. These data do not include those materials that were processed by a business or public body on site as part of its production process (e.g., steel at a foundry or paper at a pulp and paper mill). Consequently, it is expected that much of the recycling that is performed by the industrial sector is underestimated. In addition, composting data are reported separately and are not included in the recycling tonnages reported in Tables 2.6 and 2.7.

Table 2.6
Hazardous and Non-hazardous Materials Prepared for Recycling or Reuse by Type and by Province and Territory, 1996¹

Province/Territory	Cardboard and boxboard		Mixed paper	Glass	Ferrous metals	Copper and aluminum		Other metals	Wood	Plastics	Oils and solvents	Other materials ²	Total
	Newsprint	tonnes											
Newfoundland	-	x	x	-	-	-	x	-	-	-	x	-	3 906
Prince Edward Island	x	x	x	x	x	x	-	x	-	-	-	-	x
Nova Scotia	9 874	2 426	368	1 081	17 312	336	x	1 051	806	x	1 495	-	34 650
New Brunswick	5 303	8 810	x	1 687	2 520	x	x	x	x	-	29 116	-	52 370
Quebec ³	..	..	795 510 ⁴	85 380	916 000	..	106 520	..	46 090	..	1 056 090 ⁵	-	3 005 590
Ontario	282 349	243 747	64 437	75 090	276 735	23 360	21 236	43 882	13 130	10 935	428 286	-	1 483 187
Manitoba	6 132	7 709	x	1 190	x	775	x	x	732	-	18 553	-	46 102
Saskatchewan	3 124	4 676	x	x	x	x	x	x	x	x	x	x	18 652
Alberta	26 407	12 786	5 021	6 643	2 051	104	1 405	x	2 015	x	5 691	-	324 845
British Columbia	38 366	39 275	27 856	35 993	46 950	3 185	4 461	52 627	69 904	332	110 137	-	429 086
Yukon and Northwest Territories	x	x	x	-	x	x	-	-	-	-	-	x	x
Canada	372 642	321 912	905 644	207 348	1 265 947	27 642	135 270	100 451	135 936	281 450	1 649 407	5 403 649	

Notes :

Figures may not add due to rounding.

1. This information covers only those companies and local waste management organizations that reported material preparation activities.

2. Other materials include tires, textiles, contaminated soil and construction and demolition materials such as gypsum board and lumber.

3. Figures are derived from the results of complementary surveys conducted by the province.

4. Includes all paper materials.

5. Total includes 875 110 tonnes of construction and demolition materials. See Text Box 2.1 for more information.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 2.7
Non-Hazardous and Hazardous Materials Prepared for Recycling or Reuse by Source and by Province and Territory, 1996¹

Province/Territory	Residential	Industrial, commercial and institutional	Construction and Demolition	Hazardous	Total
Newfoundland	x	x	-	-	3 906
Prince Edward Island	x	x	x	-	x
Nova Scotia	13 143	14 338	5 377	x	34 650
New Brunswick	14 547	26 185	x	-	52 370
Quebec ²	385 180	1 724 800	875 110	20 500	3 005 590
Ontario	326 693	692 590	365 896	98 008	1 483 187
Manitoba	20 955	16 764	x	x	46 102
Saskatchewan	x	x	x	x	18 652
Alberta	76 434	148 091	66 880	33 440	324 845
British Columbia	136 345	180 457	92 233	20 051	429 086
Yukon and Northwest Territories	x	x	x	x	x
Canada	980 115	2 815 299	1 427 339	180 896	5 403 649

Notes :

1. Sources of materials for recycling or reuse are derived from reported sources of materials collected and transported. Residential, industrial, commercial and institutional and construction and demolition materials are treated as non-hazardous and all hazardous materials are aggregated separately.

2. Figures are derived from the results of complementary surveys conducted by the province.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Central composting

Over 576 thousand tonnes of organic materials were composted in central facilities operated by public waste management organizations in 1996 (Table 2.8). These data only include those centralized programs that are operated by public waste management organizations such as local governments or waste management boards or commissions. They do not include estimates for non-centralized composting programs such as backyard composting bins and do not include estimates for composting facilities that are privately owned and operated. Data released for the 1998 reference year will include estimates for private as well as public facilities.

Table 2.8
Central Composting¹ by Province and Territory, 1996

Province/Territory	Central composting tonnes
Newfoundland	x
Prince Edward Island	x
Nova Scotia	7 705
New Brunswick	x
Quebec ²	114 120
Ontario	287 323
Manitoba	37 193
Saskatchewan	8 322
Alberta	20 693
British Columbia	92 278
Yukon and Northwest Territories	x
Canada	576 769

Notes :

1. Includes only those materials handled through a publicly owned and/or operated central composting program.
2. Figures are derived from the results of complimentary surveys conducted by the province.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

3 Business Sector: Financial and Employment Characteristics

Table 3.1 presents a summary of financial and employment statistics for the business sector of the waste management industry in 1996.

3.1 Revenues

Revenues of the business sector of the waste management industry totalled \$2 662 million in 1996. This translates to slightly more than a 2% growth rate from 1995 levels. Businesses operating in Ontario reported \$1 318 million in revenues, 50% of the national operating revenues of the business sector of the waste management industry. Quebec reported an additional 23% of the total. British Columbia had the third highest revenue level (11%), closely followed by Alberta (10%).

The waste management industry is concentrated in the hands of a relatively small number of large firms. The 63 largest businesses (those with 50 or more employees) reported 67% of the total revenue although they accounted for only 4% of the total number of businesses in the industry. The 1 285 small firms (under 20 employees) accounted for only 21% of the revenues (Tables 3.1 and 3.2).

Details on waste management revenues by type of activity for the surveyed businesses are presented in Table 3.2.

Collection and transportation activities, both for disposal and for recycling or reuse, were the largest source of revenues for the surveyed business sector of the waste management industry. Fifty-six percent of total revenues came from this source. The second ranking activity, in terms of revenue generated, was the preparation of materials for recycling or reuse. This activity accounted for about 10% of the revenues. The operation of a disposal facility and hazardous waste management facility generated respectively 9% and 8% of waste management revenue.

On a provincial basis, at least 55% of total business operating revenues were reported to be derived from waste collection and transportation (disposal plus recycling or reuse) in all provinces except Ontario (53%). The highest proportions of revenues from this source were reported in Manitoba and Newfoundland (84% and 79% respectively).

When examining the firm size groups, one finds that the small businesses, as a group, had a higher proportion of their total revenues derived from collection and transportation activities (68%) than the other business size groups (52% and 56% respectively for large and medium sized businesses). Smaller firms have more of a tendency to concentrate on collection and transportation of waste and materials for recycling and reuse than do the larger businesses (Table 3.2). By contrast, the opposite is true of hazardous waste facility management. Only 1% of small

Table 3.1
Waste Management Industry: Business Sector Characteristics by Province and Territory, 1996

Province/Territory	Businesses ¹	Total employees ²	Operating expenses	Capital expenditures	Operating revenues, 1996	Operating revenues, 1995
	number			thousand dollars		
Newfoundland	44	283	22 999	1 965	22 430	23 322
Prince Edward Island	x	x	x	x	x	x
Nova Scotia	76	630	56 033	3 932	50 424	49 763
New Brunswick	62	406	43 335	6 085	35 820	30 945
Quebec	509	5 086	564 337	66 887	607 066	704 912
Ontario	373	7 731	1 230 158	90 249	1 318 298	1 128 298
Manitoba	34	375	41 439	4 173	48 704	36 697
Saskatchewan	33	255	20 289	1 666	19 314	22 694
Alberta	110	1 865	238 262	28 892	257 148	275 195
British Columbia	211	2 455	281 324	41 252	293 813	316 688
Yukon and Northwest Territories	x	x	x	x	x	x
Employment size group						
Under 20 employees	1 285	5 619	580 674	62 527	569 259	572 495
20 to 49 employees	85	2 880	297 168	42 398	312 369	388 433
50 and more employees	63	10 852	1 634 537	159 284	1 780 425	1 643 387
Canada	1 433	19 351	2 512 379	264 209	2 662 053	2 604 315

Notes :

Figures may not add due to rounding.

1. As businesses may operate in more than one province the national count will not equal the sum of the provincial count of businesses.

2. Includes full and part-time employees.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 3.2

Operating Revenues of Waste Management Businesses by Activity and by Province and Territory¹, 1996

Province/Territory	Activities reported									Total revenues
	Collection and transportation for disposal	Collection and transportation for recycling or reuse	Operation of a waste transfer facility	Preparation of materials for recycling or reuse	Operation of a disposal facility ²	Operation of a hazardous waste facility	Sewage treatment	Sale of recovered materials	Other waste management revenues	
thousand dollars										
Newfoundland	15 761	1 866	x	700	887	x	51	x	943	22 430
Prince Edward Island	2 295	x	x	x	1 419	x	x	x	x	x
Nova Scotia	28 950	6 308	x	3 207	1 140	x	55	x	1 030	50 424
New Brunswick	19 161	1 701	3 752	4 419	x	810	62	x	635	35 820
Quebec	287 021	46 278	27 890	32 170	82 847	75 008	6 803	20 833	28 216	607 066
Ontario	524 016	170 039	166 129	163 637	82 632	75 294	4 036	112 942	19 572	1 318 298
Manitoba	37 969	2 915	x	2 730	882	83	x	323	253	48 704
Saskatchewan	8 685	3 271	169	4 006	x	x	216	x	179	19 314
Alberta	120 624	21 642	10 054	15 900	33 164	x	x	2 355	4 300	257 148
British Columbia	157 783	32 974	18 298	37 456	19 023	12 186	x	x	7 140	293 813
Yukon and Northwest Territories	2 965	x	17	x	490	x	x	x	x	x
Employment size group										
Under 20 employees	308 000	76 988	24 214	48 533	59 374	5 731	8 933	11 021	26 465	569 259
20 to 49 employees	135 256	40 153	23 971	39 904	23 783	23 212	2 813	17 770	5 507	312 369
50 and more employees	761 974	170 652	187 332	176 296	146 657	186 999	3 988	115 940	30 589	1 780 425
Canada	1 205 230	287 793	235 517	264 733	229 814	215 941	15 734	144 731	62 560	2 662 053

Notes :

Figures may not add due to rounding.

1. Includes administrative data for businesses that were below the survey threshold for inclusion.

2. Includes landfills and incinerators.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

business revenues were derived from this source, compared to 11% for large firms and 7% for medium-sized businesses. This may be explained by large capital investments required for the management of certain types of hazardous wastes.

The majority of revenues for collection and transportation came from institutional, commercial and industrial (IC&I) clients, (64%) while 17% of collection and transportation revenues came from households and 15% from governments (Table 3.3).

3.2 Waste management activities

Waste management businesses provide a variety of different services (Table 3.4). The collection and transportation of waste for disposal and of materials for recycling or reuse were the primary activities reported by the industry. Seventy-five percent of the waste management firms reported waste collection and transportation activities while 28% reported that they collected and transported materials for recycling or reuse. The operation of a non-hazardous landfill was another activity reported more frequently (19%), followed by the preparation of materials for recycling or reuse (17%).

Smaller firms tended to focus on collection and transportation activities, especially for disposal (83%). Further, larger businesses reported higher involvement in the

collection and transportation of recyclables (63%) than did the small or medium-size firms (Table 3.4).

While Tables 3.2 and 3.4 point out some relationships between the size of a firm and the specific types of activities upon which firms of a particular size may concentrate on, looking at the *number* of activities undertaken also brings out some interesting characteristics.

In many industries, larger businesses are generally more horizontally or vertically integrated across a number of activities that make up the industry's production process. For example, many engineering firms offer a set of services that offer the customer "one-stop shopping" for the needs of a particular project. The waste management industry is no different. The size of a firm appears to have a bearing on the number of waste management activities that are performed by the business. Overall, 78% of all businesses reported carrying out more than one waste management activity and 24% reported four or more activities. But among small firms, 27% reported only one operation while only 17% reported four or more activities. In contrast, only 7% of the large firms indicated just one activity while 45% reported four or more activities (Table 3.5).

Table 3.3

Waste and Recyclables Collection and Transportation Activities by Source of Revenue and by Province and Territory, 1996

Province/Territory	Source of revenue			
	Governments	Households	Industrial, commercial and institutional	Other
		percent		
Newfoundland	11	7	76	6
Prince Edward Island	x	x	x	x
Nova Scotia	39	8	51	2
New Brunswick	20	6	72	2
Quebec	23	12	60	4
Ontario	11	19	65	5
Manitoba	15	x	75	x
Saskatchewan	26	6	69	-
Alberta	15	25	55	5
British Columbia	14	12	69	5
Yukon Territory	40	x	52	x
Northwest Territories	x	13	x	2
Canada	15	17	64	4

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 3.4

Frequency of Waste Management Activities Conducted by Businesses by Province and Territory, 1996^{1,2}

Province/Territory	Activities reported								
	Collection and transportation for disposal	Collection and transportation for recycling or reuse	Operation of a waste transfer facility	Preparation of materials for recycling or reuse	Operation of a landfill for non-hazardous waste	Operation of an incinerator for non-hazardous waste	Sewage treatment	Operation of a hazardous waste facility	Other activity
	percentage of businesses reporting activity								
Newfoundland	77	39	18	18	x	-	x	18	20
Prince Edward Island	73	x	x	50	30	x	-	-	20
Nova Scotia	78	55	13	26	x	x	-	x	7
New Brunswick	73	48	20	39	x	-	x	13	21
Quebec	69	56	23	44	24	x	x	23	19
Ontario	72	41	18	30	7	-	2	11	8
Manitoba	74	43	14	34	11	-	9	11	17
Saskatchewan	76	56	28	48	16	-	x	x	12
Alberta	69	44	17	27	x	-	x	15	9
British Columbia	73	56	15	41	13	x	x	14	11
Yukon and Northwest Territories	67	x	x	-	x	-	-	x	-
Employment size group									
Under 20 employees	83	31	7	19	22	1	2	3	11
20 to 49 employees	69	52	24	36	8	2	5	7	13
50 and more employees	73	63	29	49	13	3	8	13	19
Canada	75	28	6	17	19	--	2	3	10

Notes :

1. This table presents the percentage of companies reporting each of the indicated waste management activities. As companies may perform more than one activity, the percentages will not sum to 100.

2. This information covers only those companies that were surveyed.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 3.5

Number of Activities Reported by Waste Management Businesses by Province and Territory, 1996¹

Province/Territory	Activities reported				
	One	Two	Three	Four	Five or more
	percentage of businesses				
Newfoundland	39	31	25	5	-
Prince Edward Island	20	20	60	-	-
Nova Scotia	12	43	29	4	11
New Brunswick	40	30	25	6	-
Quebec	31	29	21	7	13
Ontario	20	32	24	14	9
Manitoba	20	23	34	23	-
Saskatchewan	32	18	24	6	20
Alberta	23	25	14	19	19
British Columbia	20	29	31	10	10
Yukon and Northwest Territories	36	36	27	-	-
Employment size group					
Under 20 employees	27	34	23	10	7
20 to 49 employees	10	26	20	29	15
50 and more employees	7	23	24	27	18
Canada	22	31	23	15	9

Note :

1. This table presents, by province and by firm size, businesses classified by the number of waste management activities that they conduct. This is expressed as a percentage of the total number of businesses.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

3.3 Operating and capital expenditures

Operating expenditures

A breakdown of operating expenses of the waste management businesses is shown in Table 3.6. At the national level, wages and salaries were the largest component of expenses (24%), followed by tipping fees paid to waste disposal facilities (22%). Purchasing materials and supplies was the third largest category of expenditure (12%). This distribution is similar to the pattern seen in 1995.

On a provincial basis, wages and salaries were the largest expense for all provinces except for Ontario and Manitoba. Tipping fee expenses in Alberta (16%) and Newfoundland (16%) were below the national average of 22% of total operating expenditures while those in Manitoba (30%) British Columbia (25%) and Nova Scotia (26%) were above the national average. The wide variance of the proportion of tipping fees expenses from province to province reflects a nation-wide lack of consistency in the funding of waste management services and particularly disposal facilities.

Tipping fees were the highest operating expenses for the large businesses, (23%) while wages and salaries followed close behind (21%). Medium-sized firms saw 32% of their total operating expenses go to salaries and wages, while only 17% were allocated to tipping fees. The small firms

directed 29% of their total operating expenses to wages and salaries and 21% to tipping fees.

Capital expenditures

Waste management firms invested over \$264 million in capital during 1996 (Table 3.7). There are marked variations between levels of capital expenditures across the provinces. With an average of \$263 thousand per firm, firms operating in Alberta reported the highest level of capital expenditures per business, with businesses in Ontario (\$242 thousand) following close behind. Firms operating in Saskatchewan (\$50 thousand) and Newfoundland (\$45 thousand) had the lowest levels of capital expenditures per business.

Waste management businesses directed the largest proportion of capital expenditures towards machinery and equipment (45%) excluding vehicles (24%). This was true of firms of all size categories (Table 3.7).

On average, each large firm allocated \$2.5 million to capital expenditures, while the average capital expenditure level of small firms reached \$49 thousand. Small firms tended to direct more of their capital expenditures to vehicles (34%) than the large or medium-size businesses (22% and 14% respectively). The opposite is true when one examines the capital expenditures targeted to the construction and refurbishing of facilities. Large firms used 27% of their capital outlay in this way, medium-sized firms, 20% and small firms only allocated 11%.

Table 3.6
Operating Expenditures¹ of Waste Management Businesses by Type and by Province and Territory, 1996

Province/Territory	Wages and salaries		Fuel and electricity	Other materials and supplies	Maintenance and repairs	Depreciation	Tipping fees	Operating licences and permits	Other expenses	Total expenses
	Benefits									
	thousand dollars									
Newfoundland	6 623	903	1 511	2 297	1 947	2 207	3 602	240	3 669	22 999
Prince Edward Island	3 065	x	2 043	765	1 153	1 130	x	x	1 642	x
Nova Scotia	15 920	2 061	3 365	5 362	4 519	4 378	14 281	838	5 310	56 033
New Brunswick	13 383	2 487	2 316	3 220	3 451	5 798	8 349	316	4 016	43 335
Quebec	165 868	26 687	31 252	56 605	50 045	55 106	113 914	11 178	53 682	564 337
Ontario	252 241	46 178	123 099	166 423	139 511	87 290	275 665	51 614	88 137	1 230 158
Manitoba	9 365	1 682	1 673	3 588	2 285	2 931	12 445	1 066	6 406	41 439
Saskatchewan	7 196	685	1 282	1 254	1 369	2 427	3 669	361	2 046	20 289
Alberta	57 136	10 435	12 566	26 167	18 798	40 000	38 500	3 717	30 942	238 262
British Columbia	75 703	11 530	14 894	23 728	24 583	24 391	71 567	6 375	28 552	281 324
Yukon and Northwest Territories	1 694	x	194	315	260	358	x	x	268	x
Employment size group										
Under 20 employees	170 560	19 997	36 484	50 946	48 622	46 057	120 933	7 127	79 948	580 674
20 to 49 employees	94 428	14 422	18 281	29 729	26 272	30 286	50 272	2 799	30 677	297 168
50 and more employees	343 207	68 716	139 429	209 049	173 027	149 671	371 519	65 876	114 043	1 634 537
Canada	608 195	103 136	194 194	289 724	247 921	226 014	542 725	75 801	224 668	2 512 379

Note :

Figures may not add due to rounding.

1. Includes administrative data for businesses that were below the survey threshold.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

Table 3.7
Capital Expenditures¹ of Waste Management Businesses by Type and by Province and Territory, 1996

Province/Territory	Vehicles	Other machinery and equipment	Construction and refurbishing of facilities	Maintenance and repairs	Other	Total capital expenditures	Capital expenditures per business
	thousand dollars						
Newfoundland	592	899	273	162	38	1 965	45
Prince Edward Island	x	x	x	x	x	x	x
Nova Scotia	1 802	1 265	204	563	98	3 932	52
New Brunswick	1 644	1 585	2 639	142	74	6 085	98
Quebec	17 891	21 046	21 771	3 259	2 921	66 887	131
Ontario	25 972	39 305	14 583	6 449	3 940	90 249	242
Manitoba	2 061	984	831	116	181	4 173	123
Saskatchewan	426	934	76	179	50	1 666	50
Alberta	4 516	13 876	8 793	1 274	433	28 892	263
British Columbia	7 233	24 678	6 017	1 797	1 527	41 252	196
Yukon and Northwest Territories	x	x	x	x	x	x	x
Employment size group							
Under 20 employees	21 299	24 818	7 125	5 496	3 789	62 527	49
20 to 49 employees	5 795	26 155	8 547	1 363	539	42 398	499
50 and more employees	35 763	68 571	42 827	7 174	4 948	159 284	2 528
Canada	62 857	119 544	58 499	14 033	9 276	264 209	184

Notes :

Figures may not add due to rounding.

1. Includes administrative data for businesses that were below the survey threshold.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

3.4 Employment and number of businesses

Waste management businesses reported 18 327 full-time and 1 024 part-time employees (Table 3.8). Forty percent of the total in the industry was employed by firms in Ontario while 26% of the total worked in Quebec. British Columbia

(13%) and Alberta (10%) also had relatively substantial shares of the total business sector waste management employment.

Although there were fewer large waste management firms than small and medium-size ones, they employed most of the sector's labour force (56%). By contrast, the small firms, despite making up 90% of the total number of firms in the sector, employed only 29% of the private sector work force.

Table 3.8
Employment by Waste Management Businesses and by Province and Territory, 1996

Province/Territory	Businesses 1996 ¹	Businesses 1995 ¹	Full-time employees, 1996 ²	Part-time employees, 1996	Total employees 1996	Total employees 1995
	number					
Newfoundland	44	42	224	59	283	288
Prince Edward Island	x	x	x	x	134	129
Nova Scotia	76	83	563	67	630	648
New Brunswick	62	60	370	36	406	314
Quebec	509	519	4 728	358	5 086	5 542
Ontario	373	385	7 511	220	7 731	6 936
Manitoba	34	36	362	13	375	293
Saskatchewan	33	39	246	9	255	277
Alberta	110	109	1 822	43	1 865	1 939
British Columbia	211	222	2 324	131	2 455	2 487
Yukon and Northwest Territories	x	x	x	x	56	55
Employment size group						
Under 20 employees	1 285	1 321	5 038	581	5 619	5 788
20 to 49 employees	85	106	2 607	273	2 880	3 215
50 and more employees	63	65	10 682	170	10 852	9 904
Canada	1 433	1 492	18 327	1 024	19 351	18 908

Notes :

Figures may not add due to rounding.

1. As businesses may operate in more than one province or territory, the national totals will not equal the sum of the provincial totals.

2. All employment estimates obtained from administrative data were counted as full-time employees.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

4 Government Sector, Financial and Employment Characteristics

Local waste management authorities provide a number of services that are funded from either tax revenues or non-tax revenues. The financial information contained in the following section only addresses those revenues that were accrued from sources *outside* the tax base and exclude provincial and territorial transfers.

4.1 Current and capital expenditures

Category of expenditure

Table 4.1 provides a summary of current expenditures on waste management activities made by local governments and other waste management local authorities. These expenditures totalled almost \$1 104 million in 1996.

Forty-five percent of these current expenditures went to the collection and transportation of waste, recyclables and organic materials. The operation of disposal facilities was the second largest expenditure item, accounting for 29% of the total, followed by tipping fees (9%).

Local governments providing waste management services in Ontario accounted for 36% of current expenditures while

those in Quebec made up 28% of the national total. The targets of these expenditures varied widely across the country, reflecting the diversity of waste services funding and operational arrangements that exist in Canada. For example, from Quebec to Alberta, collection and transportation activities were the dominant expenditures items. However, those local governments in New Brunswick, Nova Scotia and British Columbia allocated the highest proportion of their waste management expenditures to the operation of disposal facilities.

Service providers

Table 4.2 shows who are the ultimate providers of local government waste management services. For 1996, these were divided into three categories: in-house employees, contractors and other governments. Nationally, 54% of waste management expenditures were paid for services provided by contractors, 42% were allocated to waste management services performed by the local government's own employees, and 4% were paid out to other government bodies providing these services.

A comparison between the 1994 allocation of waste management services and the 1996 allocation is shown in Table 4.3. While in 1994, the own employees/contractors split was even, 1996 data suggest that more local waste

Table 4.1
Local Government Current Expenditures on Waste Management by Activity and Province and Territory,¹ 1996

Province/Territory	Collection and transportation	Tipping fees	Operation of disposal facilities	Operation of recycling facilities	Operation of organics processing facilities	Other	Total
Newfoundland	5 078	x	2 779	x	-	x	8 600
Prince Edward Island	2 037	x	x	-	x	x	x
Nova Scotia	12 660	608	23 783	9 439	551	8 449	55 489
New Brunswick	4 205	2 903	6 549	x	-	1 544	15 384
Quebec ²	139 480	28 576	90 646	22 352	3 727	22 811	307 592
Ontario	198 614	43 310	92 710	35 374	6 318	22 499	398 826
Manitoba	16 069	5 582	8 027	1 055	x	x	31 230
Saskatchewan	10 099	981	4 424	615	x	x	16 246
Alberta	48 812	6 966	16 439	x	x	10 602	87 963
British Columbia	61 188	12 501	78 328	6 151	1 783	15 528	175 478
Yukon and Northwest Territories	2 310	-	x	x	x	x	x
Canada	500 553	102 549	325 302	80 215	13 374	81 863	1 103 856

Notes :

Figures may not add due to rounding.

1. Includes operating expenditures directed toward waste management services.

2. Total is derived from a complementary survey conducted by Public Institutions Division, breakdowns are imputed or are derived from administrative sources.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.

Table 4.2
Local Government Current Expenditures on Waste Management by Service Provider and by Province and Territory, 1996

Province/Territory	Current expenditures ¹ thousand dollars	Service provider ²		
		Own employees ³ percent	Contractors	Other government
Newfoundland	8 600	69	26	5
Prince Edward Island	x	x	x	x
Nova Scotia	55 489	77	21	2
New Brunswick	15 384	44	44	11
Quebec ⁴	307 592	19	81	..
Ontario	398 826	46	49	5
Manitoba	31 230	63	36	1
Saskatchewan	16 246	75	24	0
Alberta	87 963	60	37	3
British Columbia	175 478	43	49	8
Yukon and Northwest Territories	x	x	x	x
Canada	1 103 856	42	54	4

Notes :

Figures may not add due to rounding.

1. Current expenditure figures are preliminary and cover surveyed municipalities. Current expenditures cover collection and transportation of waste for disposal or recyclables/organics, tipping fees, disposal facilities, organics processing facilities and other waste management expenditures.

2. Columns indicate percentage of current expenditures spent on programs delivered by own employees versus payments to contractors or other governments or government bodies for services.

3. Full-time and part-time employees working in the waste management activities of the municipality. Employment figures are only for surveyed municipalities. They do not include estimates of waste management employment in municipalities with less than 4 000 population unless a disposal facility is situated within it.

4. Total current expenditures are derived from a complementary survey conducted by Public Institutions Division. The expenditure breakdowns and number of employees are imputed or are derived from administrative sources.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.

Table 4.3
Local Government Current Expenditures on Waste Management by Service Provider and Activity, 1994 and 1996¹

Activity	1994		1996		
	In-house employees	Contractors	In-house employees	Contractors	Other governments ²
	percent				
Collection and transportation	45	55	39	61	-
Tipping fees	..	..	18	51	32
Disposal facilities	59	41	48	51	1
Recycling facilities	38	62	37	62	1
Organics processing facilities	..	..	47	53	-
Other activity ³	50	50	73	26	1
All	50	50	42	54	4

Notes :

1. Proportion of current expenditure by service provider includes estimates for surveyed municipalities, as well as estimates for municipalities that were not surveyed.

2. The 1996 *Waste Management Industry Survey: Government Sector* included the Other Governments category. This category would be generally covered in the Contractors category in the 1994 data.

3. Tipping fees and organics processing facilities were included in "Other activity" in 1994.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

management authorities were contracting out to the private sector for the provision of these services. Overall, the largest shift has been in the operation of disposal facilities. In 1994, 59% of waste management expenditures allocated to the operation of disposal facilities came from in-house employee activities. By 1996, only 48% of these expenditures were for disposal facilities operated by in-house personnel, while 51% were spent on contracted services. Also notable is the shift to the contracted out provision of collection and transportation services. Local waste management authorities have shifted 6% of their total expenditures in this category from in-house employees to contracted services.

Capital expenditures

Local government waste management services were responsible for capital expenditures of over \$112 million in 1996 (Table 4.4). Disposal facilities accounted for 51% of this sum while collection and transportation made up 21%.

Local governments in Ontario and Nova Scotia invested the largest amounts on waste management capital expenditures (\$57 million and \$14 million respectively) followed by Alberta (\$13 million) and British Columbia (\$11 million).

Table 4.4

Capital Expenditures by Local Governments on Waste Management Services by Activity and by Province and Territory, 1996

Province/Territory	Collection and transportation	Disposal facilities	Recycling facilities	Organics processing facilities	Other	Total capital expenditures
Newfoundland	x	1 233	-	-	x	1 828
Prince Edward Island	-	x	-	-	-	x
Nova Scotia	x	9 321	3 655	x	1 301	14 416
New Brunswick	x	1 279	-	-	x	2 113
Quebec ²	1 464	3 517	1 032	x	x	6 851
Ontario	15 338	27 418	10 742	1 136	2 377	57 012
Manitoba	369	1 639	x	x	x	2 160
Saskatchewan	x	1 470	x	-	x	2 049
Alberta	1 624	5 544	674	379	5 087	13 308
British Columbia	4 082	5 126	486	353	1 140	11 187
Yukon and Northwest Territories	x	x	x	-	x	x
Canada	23 954	57 551	16 888	2 092	11 618	112 103

Notes :

Figures may not add due to rounding.

1. Includes capital expenditures that were made by local governments and other public organizations for waste management purposes.

2. Total capital expenditures are derived from a complementary survey conducted by Public Institutions Division. The expenditure breakdowns are imputed or are derived from administrative sources.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.

4.2 Revenues

Total non-tax revenues collected by local governments or other waste management public authorities amounted to almost 637 million in 1996 (Table 4.5). Of this total, 60% was collected through the receipt of tipping fees from other local governments or private businesses. Among the provinces, only Alberta had a revenue source that surpassed tipping fees. In that province, utility bill payments comprised the largest share of waste management revenues.

Table 4.5

Waste Management Revenue Sources for Local Governments by Province and Territory¹, 1996

Province/Territory	Utility bill payments	Contract revenues	Sale of recyclable materials	Tipping fees	Disposal facility royalties	Other revenues (bag tags, permits)	Total revenues
Newfoundland	x	x	x	x	x	-	1 977
Prince Edward Island	x	-	-	x	-	-	1 973
Nova Scotia	-	-	1 472	10 432	x	x	12 693
New Brunswick	x	-	x	7 868	-	x	8 371
Quebec ²	..	..	..	113 914	..	98 792	212 706
Ontario	9 965	213	31 863	126 109	4 161	10 617	182 928
Manitoba	x	x	652	9 554	-	168	10 597
Saskatchewan	2 240	439	x	4 309	x	x	7 240
Alberta	33 214	3 884	2 062	15 741	189	282	55 373
British Columbia	35 820	4 134	1 783	88 573	2 251	7 522	140 082
Yukon and Northwest Territories	x	x	x	x	x	x	2 774
Canada	85 578	8 890	38 127	379 009	6 665	118 445	636 714

Notes :

Figures may not add due to rounding.

1. Includes revenues collected specifically for waste management purposes by local governments and other public waste management organizations that provided waste management services in 1996. They do not include general municipal tax revenues.

2. Figures are derived from administrative sources.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.

4.3 Employment

Table 4.6 presents employment information for local governments and other public organizations that directly supplied waste management services in 1996. This sector directly employed 7 924 persons, 38% of whom were employed by local governments in Ontario.

Table 4.6
Waste Management Employment by Local Governments¹ and by Province and Territory, 1996

Province/Territory	Full-time employees	Part-time employees		Total employees ²
		number		
Newfoundland	98	66		164
Prince Edward Island	x	x		x
Nova Scotia	253	37		290
New Brunswick	68	60		128
Quebec ³	1 355	402		1 757
Ontario	2 556	404		2 960
Manitoba	303	246		549
Saskatchewan	197	113		310
Alberta	659	294		953
British Columbia	603	164		767
Yukon and Northwest Territories	x	x		x
Canada	6 115	1 809		7 924

Notes :

1. Includes local governments, waste management boards and commissions and provincial bodies responsible for the delivery of waste management services.

2. Includes full-time and part-time employees working in the waste management activities of surveyed municipalities. No estimate has been made for non-surveyed municipalities.

3. Figures are derived from administrative data from other sources.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.

5 Survey Design and Methodology

5.1 Developing information on waste management

This section describes the design and methodology of the 1996 waste management industry surveys. It addresses the following areas: the survey universe, the procedures for data collection, editing, imputation and quality assurance.

The 1996 *Waste Management Industry Survey: Business Sector* asked firms to report information on their waste management activities for each of their provincial and territorial operations. Businesses were selected based on the size of their work force as well as the level of their total revenues, the threshold (based on revenue and employment levels) that was used to include or exclude a particular business depending on the province or territory in which they operated. For example, surveyed businesses from Newfoundland had a lower cut-off than those from Ontario. For those firms not included in the survey because of their small size, administrative data from Statistics Canada's Business Register on total operating revenues and total employment were used to estimate their contribution to the industry.

Surveyed local governments and other public waste management bodies were selected upon the basis of population size and whether or not a disposal site operated within their jurisdiction. The 1996 *Waste Management Industry Survey: Government Sector* asked essentially the

same questions as the business survey for the waste and recyclable quantities and types sections but differed somewhat on the financial questions.

To arrive at physical totals for the disposal and recycling sections, data from the two surveys were combined and duplicate entries were removed. Operating arrangements of disposal sites can vary. Some sites may be owned by a government body but operated by a private firm. They may also be owned and operated by a government or by a private business. The point of measurement was the disposal facility. Since in some cases an owner of a facility may not have necessarily been the operator and the survey may have been completed by both the owner and the operator, care was taken to ensure that the information from each facility was only counted once.

Not all of the population may have access to or use formal disposal facilities. In rural areas especially, arrangements can be made with a landowner to use property for the purpose of small-scale crude disposal sites ("dumps"). For this reason and others, a survey coverage population was developed using information provided by survey respondents and other sources about the municipalities that were served by the disposal and recycling facilities. Total populations were calculated for these municipalities using Statistics Canada Census data. The difference between the Census population and the covered population was derived. A provincial per capita disposal figure was applied

Table 5.1
Survey Area Population (Disposal Data) as a Percentage of Total Provincial and Territorial Population, 1996

Province/Territory	Surveyed population	1996 Census Population	Surveyed population percentage of total provincial population	Population undercovered by survey
	number		percent	
Newfoundland	434 443	553 206	79	21
Prince Edward Island	61 358	136 188	45	55
Nova Scotia	902 834	931 235	97	3
New Brunswick	437 316	752 995	58	42
Quebec ¹	7 286 231	7 286 231	..	..
Ontario	10 057 976	11 100 876	91	9
Manitoba	953 306	1 134 346	84	16
Saskatchewan	699 950	1 019 459	69	31
Alberta	2 560 023	2 780 639	92	8
British Columbia	3 501 009	3 882 043	90	10
Yukon Territory	19 153	31 938	60	40
Northwest Territories	17 000	67 570	25	75
Canada	26 930 599	29 676 726	91	9

Note :

1. Quebec local governments or other public waste management organizations were not surveyed. Information was collected from other sources and the population coverage is not known.

Sources :

Statistics Canada, Environment Accounts and Statistics Division and CANSIM, matrices 6367-6379.

to this undercovered population, and this total was added to the survey total to arrive at an adjusted disposal figure.

Table 5.1 shows the percentage of the population for each province that was not covered by the surveys and for which estimates were derived.

5.2 Survey universe

Business sector

The mailing list for the 1996 *Waste Management Industry Survey: Business Sector* was based on the 1995 survey frame supplemented and updated with information from the Statistics Canada Business Register (BR) and various industry directories. Firms selected from the BR are a subset of the "other utilities" (industry class 4999), as defined by the Standard Industrial Classification (1980). The combined list was cross checked once more with other industry directories, to avoid double-surveying of units. This list produced an initial mailing of 852 survey units.

The survey system for waste management has evolved since the industry was first surveyed in 1989. The 1995 survey provided an excellent opportunity to refine the frame for the 1996 *Waste Management Industry Survey: Business Sector*. There are still some difficulties encountered in the development of the frame because the waste management industry is currently treated as a subset of "other utilities" in the 1980 Standard Industrial Classification (SIC) system. However, this will be less of a problem in the 1998 version of the survey because of the reclassification of the sector into its own industry classes in the new North American Industry Classification System (NAICS) (Text Box 5.1).

During the survey process many businesses on the mailing list indicated that their major business rendered them out of scope for the survey. Many other firms had gone out of business or could not be located. After removing these firms, the survey was left with a population of 797 businesses.

Not included in the survey frame but included in the data for two variables (employment and total revenues) were firms that were excluded from the survey frame owing to their small size. These data, along with imputed data for total operating expenses and capital expenditures were added to the information obtained from the survey in order to provide a complete picture of the industry.

Government sector

The mailing list for the 1996 *Waste Management Industry Survey: Government Sector* was based on the 1996 Local Government Universe from Public Institutions Division and

various waste industry lists and sources. Local governments are the most common level of government managing waste. The Public Institutions Division list was supplemented with the names and addresses of other government bodies from provincial sources. This included, for example, regional waste management commissions and other similar agencies that were involved in the provision of waste management services.

Text Box 5.1

The Classification of Waste Management Services

The North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. Created against the background of the North American Free Trade Agreement, it is designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate the analysis of the three economies. NAICS is based on supply side or production oriented principles, to ensure that industrial data, classified to NAICS, is suitable for the analysis of production-related issues such as industrial performance.

Businesses falling into the following NAICS classifications are considered to be "in scope" for the *Waste Management Industry Survey: Business Sector*.

56211 Waste Collection

This industry comprises establishments primarily engaged in collecting and hauling non-hazardous or hazardous waste within a local area. Establishments engaged in hazardous waste collection may be responsible for treating and packaging the waste for transport. Waste transfer stations are also included.

56221 Waste Treatment and Disposal

This industry comprises establishments primarily engaged in operating land fill sites, incinerators, or other treatment or disposal facilities for non-hazardous or hazardous waste. Establishments that integrate the collection, treatment and disposal of waste are also included.

56292 Material Recovery Facilities

This industry comprises establishments primarily engaged in operating facilities in which recyclable materials are removed from waste, or mixed recyclable materials are sorted into distinct categories and prepared for shipment.

Source:

Statistics Canada, *NAICS Canada: Introduction*. <<http://www.statcan.ca/dissemination/english/Subjects/Standard/introo.htm>>, (accessed July 26, 1999).

Several provinces also collected data on some aspects of waste management in 1996. As a result, governments in some provinces either were not surveyed or were asked to respond to portions of the questionnaire only. Quebec municipalities, for example, were not surveyed because the province was responsible for collecting data.

All governments and government agencies on the final list were selected on the basis of a municipal population threshold that varied by province and whether there was a disposal facility (incinerator or landfill) within the borders of the municipality in 1996. A total of 762 surveys were mailed to respondents.

5.3 Data collection and processing

Data collection for both surveys took place during the spring and summer of 1998. Survey questionnaires were mailed to the businesses and local governments and the responses were returned by mail. The surveys were addressed to a contact person who was either responsible for, or had knowledge of, the waste management operations of the survey unit. Separate questionnaires were completed for each province in which the waste management business operated. For example, a business with operations in 3 provinces, completed 3 questionnaires—each one describing the activity(ies) within a province. This was not a concern for the local government survey.

Follow-ups by fax and/or telephone were carried out after the return due date to remind respondents to return their surveys.

Questionnaires were edited in two steps. First, validity edits were applied to ensure that responses to particular questions fell within a limited range of possible values. This type of editing was applied mostly to the questions on quantities but was also used to identify unusual values in the financial sections. A second step, consistency edits, were then applied. These identified occasions where the responses in one section of the questionnaire were logically inconsistent with those given in other sections.

Additional follow-up with the businesses and local governments was carried out to collect missing data and to correct inconsistencies.

Government sector issues

Conducting the 1996 *Waste Management Industry Survey: Government Sector* proved to be challenging for several reasons.

First, many local governments use the services of private sector waste management firms. It was essential that both

the questionnaire structure and particular wording enabled respondents to distinguish between services they provided with their own employees and those which they contracted out. In the processing phase it frequently became necessary to contact respondents to clarify the nature of these relationships.

A second more challenging aspect of the survey related to the way in which groups of municipalities work together to provide waste management services for their residents. In many areas, different tiers of local governments exist and governments in each tier may be involved in aspects of waste service delivery. Many alternative forms of service delivery were identified.

For example:

- 1) A regional government might serve an area within which there are a number of local municipalities.
- 2) The upper tier government might provide all of the waste services.
- 3) Only the lower tier municipalities might provide services.
- 4) Both tiers might provide different services (e.g., one operates a disposal facility, the other tier provides waste collection services).
- 5) Both tiers could be providing the same services to different parts of the region (a lower tier might run a disposal facility for just their municipality with the regional government running a disposal facility for the remainder of the region).
- 6) Municipalities in one or both tiers could act co-operatively through a separate government agency such as a regional waste commission that both collects waste and runs the disposal facility.
- 7) Or, none of the governments in an area could be doing any waste management, leaving provision of waste services strictly to private sector firms.
- 8) Or, there may be numerous combinations of the above scenarios.

Examples of each of these situations exist in Canada and both the survey vehicle and processing system had to be able to deal with these possibilities.

Extensive respondent follow-up was required in some cases. Returns for specific geographic areas were frequently processed together in order to build a clear picture of the service delivery area ("catchment area") and to prevent either double counting or inadvertently missing pieces of information.

5.4 Data quality

Many factors affect the quality of data produced in a survey. For example, respondents may have made errors in interpreting questions, answers may have been incorrectly entered on the questionnaires, and errors may have been introduced during the data capture or tabulation process. Every effort was made to reduce the occurrence of such errors in the survey. These efforts included: a complete verification of keyed data, validity and consistency edits, extensive follow-up with the large businesses, and consultation with selected government departments and industry associations.

In general, errors such as incomplete coverage of the universe, incorrect classification of business or government activity and inconsistencies in working definitions can be reduced if the survey is repeated at regular intervals and with sufficient frequency so that the mailing list is well maintained and the respondents are familiar with the definitions used and the type of information required.

Incomplete coverage of the industry universe occurs when a firm in the industry is overlooked. If the reason for not including the firm is that it has been incorrectly included in another industry, this is termed a classification error. Such errors have an impact upon estimates.

The large number of small firms in the waste management industry is a potential source for industrial classification errors. However, these businesses account for a comparatively small part of total industry activity. To some degree, these errors can be reduced by well designed questionnaires, by direct contact with respondents and with information from industry associations.

Although most businesses and local governments were very co-operative in answering the survey, some could not provide all the data required in the form in which it was requested. This was especially true for small firms and local governments responding to questions about the weights of material collected. Many of these businesses operate in areas where facilities do not have weigh scales or where waste volumes are tracked using liquid volume measurements. Therefore exact weights were not available; however many respondents were able to estimate the amounts handled based on the number of trips and the number and size of vehicles used. Another example of questionnaire difficulties was the breakdown of revenues by specific waste management activity. Many businesses and local governments, small and large, did not track their revenues in the manner that the survey required and left the component cells blank.

In cases where values were missing from survey cells after follow-up, information was imputed. For the business survey, both the firms with complete surveys and those with incomplete surveys were separated into three size groups,

Table 5.2
Imputation Rates for Selected Questions from the Waste Management Industry Survey: Business Sector, 1996

Question	Under 6	6 to 19	20 +	Total
	employees ¹	employees	employees	
Imputation rate				
percent				
Financial characteristics				
Total operating revenue	49	10	3	7
Total operating expenditures	75	30	14	22
Capital expenditures	73	10	7	12

Note :

1. Firms with less than 6 employees were not surveyed. Therefore, there was a high rate of imputation for this size group.

Source :

Statistics Canada, Environment Accounts and Statistics Division.

one with under 6 employees and another with 6 to 19 employees and the last with 20 and more employees. Median cell values were calculated from the donor set (the complete surveys) separately for each firm size group. These values were then applied to the cells where a value was missing in the corresponding firm size group of the incomplete surveys. The rates of imputation for selected questions are presented in Table 5.2.

Very small firms (under 6 employees) were not intentionally included in the survey frame. The threshold for the surveyed and non-surveyed businesses was based upon previous years' and/or administrative data and the size of a business may change between the two reporting periods. For those small firms that were not surveyed, employment and some financial data from the Business Register were used as base level information from which other cells (e.g., operating expenses) were imputed. Thus, there is a very high rate of imputation for these very small businesses.

For the large firms, the imputed values were carefully scrutinised and compared with values from previous years and other sources (e.g., annual reports) to ensure that the quality of the imputed values were high.

The tables presented in this report cover the data that were determined to be of sufficient quality for publication at a disaggregated level. Data confidentiality considerations as well as imputation rates play a role in this assessment. Data must be released at a level where the disclosure of the identity of any respondent in any cell is not possible. In addition, the levels of imputation must remain within reasonable limits.

References

Statistics Canada, 1995, *Households and the Environment, 1994*, Cat. 11-526, Ottawa.

Statistics Canada, 1996a, *Environmental Protection Expenditures in the Business Sector, 1994*, Item 16F0006XNE, Ottawa.

Statistics Canada, 1996b, *1994 Waste Management Industry Survey: Business Sector*, Item 16F0003XPE, Ottawa.

Statistics Canada, 1998a, *Environmental Protection Expenditures in the Business Sector (Preliminary), 1996*, Item 16F0006XNE, Ottawa.

Statistics Canada, 1998b, *1995 Waste Management Industry Survey: Business Sector*, Item 16F0003XPE, Ottawa.

Statistics Canada, 1998b, *1994 Waste Management Industry Survey: Government Sector*, Item 16F0002XPE, Ottawa.



National Accounts and Environment Division

Waste Management Industry Survey: Business Sector, 1996

Confidential when completed

Collected under authority of Statistics Act, Revised Statutes of Canada, 1985, Chapter S19.

Français au verso

Correct as required

Company Name

Operating Name

C/O

Street Address

City

Province/Territory

Postal Code



Please read before completing

Purpose of the Survey

This survey collects information that will help Canadians understand the contributions made by the waste management industry to Canada's economy and environment. The results will assist businesses in the industry to make sound decisions based on data that apply specifically to the waste management industry. Statistics Canada is also conducting a survey of government sector waste management for 1996. Together these surveys will provide a comprehensive picture of waste management in

Confidentiality

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable business, without the previous written consent of that business. The data reported will be treated in strict confidence, used for statistical purposes and published in aggregate form only. The confidentiality provisions of the Statistics Act are not affected by either the Access to Information Act or any other legislation.

Inquiries

If you require assistance in completing this questionnaire or if you have any questions or comments regarding this survey, please contact:

Operations and Integration Division

Statistics Canada

Ottawa, Ontario K1A 0T6

Telephone (toll-free): **1-800-255-7726**

Fax: **1-613-951-0709**

Email: **enviro.oid.waste@statcan.ca**

In all correspondence concerning this questionnaire, please quote the identification number that appears on the address label.

IMPORTANT: If your response for an item is zero, please write "0" in the corresponding box rather than leaving the cell blank.

Where a response in dollars is requested, please answer in Canadian Dollars.

Please return this questionnaire within 30 days of receipt

If you are unable to do so, kindly inform Operations and Integration Division of the expected completion date.

Statistics Canada use only

Rec.	D	M	Y
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Ed.	D	M	Y
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Coll.	
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4-2200-1: 1997-11-03 STC/NAD-291-04165

SECTION 2

Operating Revenues

2.1 Indicate this company's 1996 revenue from the provision of each of the following services.

Collection and transportation of waste for disposal	025	\$	.00
Collection and transportation of materials for recycling or reuse	026	\$	.00
Operation of a waste transfer facility	027	\$	.00
Preparing materials for recycling/reuse (sorting, cleaning, and volume reduction)	028	\$	.00
Operation of a (non-hazardous) waste disposal facility (landfill or incineration)	029	\$	.00
Operation of a hazardous waste treatment, containment or disposal facility	030	\$	.00
Sewage treatment/containment	031	\$	.00
Other waste management revenue	032		
Specify <input type="text" value="036"/>		\$.00
Sale of recovered materials	033	\$	.00
Other non-waste management revenue	034		
Specify <input type="text" value="037"/>		\$.00
Total revenues from all activities (sum cells 025 to 034)	035	\$	.00

Operating Expenses

2.2 Please report this company's 1996 operating expenses.

Wages and salaries	038	\$	.00
Employer contributions to pension, medical and unemployment insurance plans, etc.	039	\$	.00
Fuel and electricity	040	\$	.00
Other materials and supplies	041	\$	.00
Maintenance and repairs	042	\$	.00
Depreciation	043	\$	.00
Tipping fees paid for waste disposal	044	\$	.00
Operating licences and permits	045	\$	.00
Other, specify <input type="text" value="048"/>	046	\$	.00
Total expenses (sum cells 038 to 046)	047	\$	.00

Capital Expenditures

2.3 Report this company's 1996 capital expenditures.


Include new assets purchased in Canada and all imported assets (new and used).

Vehicles	049	\$	.00
All other machinery and equipment	050	\$	.00
Construction and refurbishing of facilities (excluding residences)	051	\$	.00
Maintenance and repairs of new and used assets	052	\$	.00
Other, specify <input type="text" value="055"/>	053	\$	.00
Total expenditures (sum cells 049 to 053)	054	\$	.00

SECTION 3

Collection and Transportation

3.1 Did this company collect and/or transport waste for disposal or materials for recycling or reuse in 1996?

056 Yes No ➤ Go to Question 4.1


3.2 Report the percentage of this company's revenue from waste/recyclables collection and transportation activities earned through contracts with the following in 1996.

Municipal/regional governments	057	%
Households (including contracts to serve apartments and condominiums)	058	%
Other institutions, commercial and industrial clients	059	%
Other, specify <input type="text" value="061"/>	060	%
Total (sum cells 057 to 060)	100	%

3.3 Indicate the types of material collected/transported by this company in 1996.

Wastes destined for disposal:


- 062 Residential
 063 Industrial, Commercial and Institutional
 064 Construction and Demolition
 065 Hazardous
 066 Sewage and Sewage Sludge

Materials intended for recycling/reuse:

- 067 Residential
 068 Industrial, Commercial and Institutional
 069 Construction and Demolition
 070 Hazardous

Exports of Waste

3.4 Did this company transport waste outside this province/territory for disposal in 1996?
 (include direct shipments and shipments from transfer stations)

071 Yes No ➤ Go to Question 4.1


3.5 Check all that apply and indicate quantities transported

	Quantity transported (tonnes)
072 <input type="radio"/> Transported to a facility in another province/territory	074
073 <input type="radio"/> Transported to a facility in another country	075


3.6 Please identify the name and location of all facilities to which the (above) waste was taken outside your province/territory.

Name of facility	Owner	Address
076	078	080
077	079	081

SECTION 4

Waste Diversion

4.1 Did this company prepare materials for recycling or reuse in 1996 by sorting, cleaning, or reducing volume?

082 Yes No ➤ Go to Question 5.1


4.2 What quantity of the following materials did this company prepare for recycling or reuse by sorting, cleaning, or reducing volume in 1996?

	Tonnes
Newsprint, phone books, magazines	083
Corrugated cardboard and boxboard	084
Mixed paper fibre	085
Glass	086
Ferrous metals	087
Copper	088
Aluminum	089
Other nonferrous metals	090
Wood	091
Plastic	092
Oils	093
Solvents	094
Other, specify ⁰⁹⁷	095
Total material prepared for recycling/reuse (sum cells 083 to 095)	096

SECTION 5

Disposal Facilities for Non-hazardous Waste

5.1 Did this company operate a disposal facility for non-hazardous waste (landfill or incineration) in 1996?

098 Yes No ➤ Go to Question 6.1

5.2 For each disposal facility that you operated in the province/territory in 1996, indicate the name and location (street or highway address), type of facility and the amount of waste disposed of in the facility as measured by weigh scales or by providing your best estimate.

Name and address of disposal facility	Did you own or lease this facility? <i>(check if yes)</i>	Type <i>(check one only)</i>		Type of waste handled <i>(check all that apply)</i>			Weigh scale present? <i>(check if yes)</i>	Quantity of waste disposed of in the facility in 1996 <i>(tonnes)</i> <i>(See definitions)</i>
		Landfill	Incinerator	Municipal waste	Construction and demolition waste	Other		
099	103 <input type="radio"/>	107 <input type="radio"/>	111 <input type="radio"/>	115 <input type="radio"/>	119 <input type="radio"/>	123 <input type="radio"/>	127 <input type="radio"/>	131
100	104 <input type="radio"/>	108 <input type="radio"/>	112 <input type="radio"/>	116 <input type="radio"/>	120 <input type="radio"/>	124 <input type="radio"/>	128 <input type="radio"/>	132
101	105 <input type="radio"/>	109 <input type="radio"/>	113 <input type="radio"/>	117 <input type="radio"/>	121 <input type="radio"/>	125 <input type="radio"/>	129 <input type="radio"/>	133
102	106 <input type="radio"/>	110 <input type="radio"/>	114 <input type="radio"/>	118 <input type="radio"/>	122 <input type="radio"/>	126 <input type="radio"/>	130 <input type="radio"/>	134

Please provide information about any additional facilities on additional sheets (photocopy this form or telephone 1-800-255-7726 to obtain additional forms.)

5.3 Did your company dispose of waste by other means than landfilling or incinerating in 1996?

135 Yes ➤ No

Method	Quantity (tonnes)
136	137

5.4 If you owned or leased a landfill, did it receive bottom ash from municipal solid waste or sewage sludge incineration?

138 Yes ➤ No

Quantity (tonnes)
139

Imports of Waste

5.5 Was waste from outside this province/territory disposed of in this company's disposal facilities?

140 Yes No

5.6 Check all that apply and indicate quantities disposed

	Quantity disposed (tonnes)
141 <input type="radio"/> Waste from other provinces/territories disposed of in your facility	143
142 <input type="radio"/> Waste from other countries disposed of in your facility	144

SECTION 6

Hazardous Waste Treatment and Disposal

6.1 Did this company operate a facility to treat, incinerate, landfill (or otherwise contain) hazardous waste in 1996?

¹⁴⁵ Yes No ➤ Go to Question 7.1
▼

6.2 Did this company:

¹⁴⁶ Own or lease the facility
¹⁴⁷ Operate the facility for another owner

6.3 What quantity of hazardous waste did this company treat or dispose of in 1996?

	Tonnes
Treatment	148
Incineration	149
Secure landfill	150
Other, specify ¹⁵³	151
Total hazardous waste treated or disposed (sum cells 148 to 151)	152

6.4 What quantity of the following types of hazardous waste did this company treat or dispose of in 1996?

	Tonnes
Organic solvents, solutions and still bottoms	154
Oils and greases, oily mixtures and residues	155
Heavy metal solutions and residuals	156
Inorganic sludges, solutions and residues	157
Pesticide and herbicide wastes	158
PCB wastes	159
Other (miscellaneous chemicals, paint, biomedical waste etc.)	160
Total hazardous waste treated or disposed of (should equal sum in Question 6.3)	161

SECTION 7

Disposal of Contaminated Soil

(answer only if you owned or leased a landfill)

7.1 Did your landfill(s) receive contaminated soil?

¹⁶² Yes ➤

Quantity (tonnes)
¹⁶³

 No

7.2 If yes, was this amount included in your response to question 5.2 or question 6.3?

¹⁶⁴ Yes
 No



National Accounts and Environment Division

Waste Management Industry Survey: Government Sector, 1996

Confidential when completed

Collected under authority of Statistics Act, Revised Statutes of Canada, 1985, Chapter S19.

Français au verso

Correct as required

Government Name

C/O

Street Address

City

Province/Territory

Postal Code



Please read before completing

Purpose of the Survey

This survey collects information that will help Canadians understand the role of governments in waste management, as well as the impact of such activity on Canada's economy and environment. Statistics Canada is also conducting a survey of private waste management for 1996. Together these surveys will provide a comprehensive picture of waste management in Canada.

Confidentiality

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable respondent, without their previous written consent. The data reported will be treated in strict confidence and used for statistical purposes only. The confidentiality provisions of the Statistics Act are not affected by either the Access to Information Act or any other legislation.

Inquiries

If you require assistance in completing this questionnaire or if you have any questions or comments regarding this survey, please contact:

Operations and Integration Division

Statistics Canada

Ottawa, Ontario K1A 0T6

Telephone (toll-free): **1-800-255-7726**

Fax: **1-613-951-0709**

Email: **enviro.oid.localgovt@statcan.ca**

In all correspondence concerning this questionnaire, please quote the identification number that appears on the address label.

IMPORTANT: If your response for an item is zero, please write "0" in the corresponding box rather than leaving the cell blank.

Please return this questionnaire within 30 days of receipt

If you are unable to do so, kindly inform Operations and Integration Division of the expected completion date.

Reporting Period

Report for the calendar year 1996.

General Instructions

This survey is intended for the jurisdiction responsible for the operation of the waste management programme.

The term "jurisdiction" is used to represent any government or government agency.

If your jurisdiction is an association of municipalities, an upper tier or a special organization with a mandate to manage waste for a number of lower-tier governments then please respond for the municipalities under your jurisdiction. All references in the questionnaire to **your jurisdiction** should be interpreted as all municipalities under your jurisdiction. Please provide a list of member municipalities.

If you represent a lower-tier government and you do not maintain statistics on any of the functions covered by this questionnaire, please tell us who we may contact to obtain this information.

If your jurisdiction can only report some of the data required, please tell us who we might contact to obtain the missing information.

There are 4 sections to this survey. In some cases provincial sources will provide the data we require. Please answer all sections of this survey unless we advise you to do otherwise.

If your municipality does not collect data in metric tonnes please convert quantities (truck loads, pounds, etc.) to metric tonnes. Estimate if necessary.

Statistics Canada use only

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4-2200-5: 1997-07-22 STC/NAD-291-04478

Definitions

Waste for disposal

Included in this category are materials, products or by-products for which the waste generator has no further use and which are received for disposal at waste disposal facilities (This does not include materials destined for recycling).

- Included:**
- municipal solid waste
 - construction and demolition waste
 - sewage sludge, septage and bottom ash from sewage incineration

- Excluded:**
- wastes that are associated with primary resource extraction or harvesting (eg. farm manure, fish waste from fish processing, market garden waste, orchard and urban forest tree prunings, mine or mill tailings, forest industry waste)
 - conventional air pollutants
 - liquid effluents from processing or manufacturing sites
 - any materials used as landfill cover
 - clean or contaminated soil including soil used as landfill cover
 - industrial sludge
 - gravel and rocks
 - by-products generically referred to as nuclear wastes and hazardous wastes
 - wastes that enter the facility but that are ultimately recycled, composted or used as cover

This definition is consistent with the definition of waste used by the Canadian Council of Ministers of the Environment.

Waste disposal facility

An establishment for the handling of solid waste for final disposal. Waste disposal facilities options include landfilling and incineration.

Municipal solid waste

Municipal solid waste includes solid waste produced by the residential and the industrial, commercial and institutional sectors and excludes construction and demolition waste.

Residential waste

Includes waste material from residential dwellings, including apartment buildings and condominiums.

Industrial, commercial and institutional waste

Includes waste material from sources such as heavy and light industry, manufacturing, warehousing, transportation, retail and wholesale commercial activities, restaurants, offices, educational or recreational facilities, health and other service facilities.

Construction and demolition waste

Includes waste material from the construction, demolition and renovation of buildings, bridges, roads and ports, and from land clearing of previously developed areas. Excludes materials from land clearing on areas not previously developed.

List all municipalities, cities, villages, towns and townships for which you are responding.

City / Municipality	Financial and employment section	Disposal facilities section	Other sections
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 1

Collection and Transportation of Waste for Disposal

1.1 In 1996, did an organized programme to collect and transport waste for disposal exist in your jurisdiction?

¹⁰¹ Yes ¹⁰² No ➤ Skip to Section 2



1.2 If yes, who collected the waste? (Check all that apply.)

¹⁰³ Your jurisdiction's employees

¹⁰⁴ Contractor(s) hired by your jurisdiction

(please specify) ➤ ¹⁰⁵

¹⁰⁶ Other (please specify) ➤ ¹⁰⁷

Exports of Waste

1.3 Was waste transported from your jurisdiction to another for disposal in 1996?
(include waste transported by your own employees or a contractor on your behalf)
(include direct shipments and shipments from transfer stations)

¹⁰⁸ Yes ¹⁰⁹ No ➤ Skip to Section 2



Check all that apply and indicate quantities transported

¹¹⁰ Transported to a facility in another jurisdiction in your province/territory

¹¹¹ Transported to a facility in another province/territory

¹¹² Transported to a facility in another country

Quantity transported (tonnes)
113
114
115

Please identify the name and location of all facilities to which the (above) waste was taken to outside your jurisdiction.

Name of facility	Owner	Location
¹¹⁶	¹¹⁸	¹²⁰
¹¹⁷	¹¹⁹	¹²¹

SECTION 2

Collection and Transportation of Materials for Recycling

2.1 In 1996, did an organized programme to collect and/or transport materials for recycling exist in your jurisdiction?
(include curbside and depot collection and separation from waste received at disposal facilities)

201 Yes 202 No ➤ Skip to Section 3
▼

2.2 Who operated the program? (check all that apply)

203 Your jurisdiction's employees

204 Contractor(s) hired by your jurisdiction

(please specify) ➤

	Name	Function performed (check all that apply)			
		Collection	Processing	Marketing	Transporting to market
205		206 <input type="radio"/>	207 <input type="radio"/>	208 <input type="radio"/>	209 <input type="radio"/>
210		211 <input type="radio"/>	212 <input type="radio"/>	213 <input type="radio"/>	214 <input type="radio"/>
215		216 <input type="radio"/>	217 <input type="radio"/>	218 <input type="radio"/>	219 <input type="radio"/>

220 Other
(please specify) ➤

221

2.3 If program was operated by your employees or your contractors, what were the recyclables collected?

(Report amounts; estimate if necessary from materials sold or distributed) (Do not include compostable materials)

	By your own employees (tonnes)	By your contractors (tonnes)
Newsprint, phone books, magazines	222	233
Corrugated cardboard and boxboard	223	234
Mixed paper fibre	224	235
Glass	225	236
Aluminum	226	237
Ferrous metals	227	238
Other metals	228	239
Wood	229	240
Plastic	230	241
Other (please specify) 244	231	242
TOTAL	232	243

Composting

2.4 What quantity of yard or kitchen waste did your jurisdiction collect and/or transport for composting in 1996?

(Include leaf litter, grass clippings, Christmas trees and food waste; Include curbside and depot collection and separation from waste received at disposal facilities)

TOTAL

(tonnes)
245

SECTION 3

Disposal Facilities

3.1 Did your jurisdiction own or lease a waste disposal facility in 1996?

301 Yes 302 No ➤ Skip to Section 4

3.2 For each disposal facility that you owned (or leased) in 1996, indicate the name and location (street or highway address), the operator if not self, type of facility and the amount of waste disposed in the facility as measured by weigh scales or by providing your best estimate.

Name and address of disposal facility	Operator of facility if not self	Type (check one only)		Type of waste handled (check all that apply)			Weigh scale present? (check if yes)	Quantity of waste disposed in the facility in 1996 (tonnes) (See definitions)
		Landfill	Incinerator	Municipal waste	Construction and demolition waste	Other		
303	307	311 <input type="radio"/>	315 <input type="radio"/>	319 <input type="radio"/>	323 <input type="radio"/>	327 <input type="radio"/>	331 <input type="radio"/>	335
304	308	312 <input type="radio"/>	316 <input type="radio"/>	320 <input type="radio"/>	324 <input type="radio"/>	328 <input type="radio"/>	332 <input type="radio"/>	336
305	309	313 <input type="radio"/>	317 <input type="radio"/>	321 <input type="radio"/>	325 <input type="radio"/>	329 <input type="radio"/>	333 <input type="radio"/>	337
306	310	314 <input type="radio"/>	318 <input type="radio"/>	322 <input type="radio"/>	326 <input type="radio"/>	330 <input type="radio"/>	334 <input type="radio"/>	338

Please provide information about any additional facilities on additional sheets (photocopy this form or telephone 1-800-255-7726 to obtain additional forms.)

3.3 Did your jurisdiction dispose of waste by other means than landfilling or incinerating in 1996?

339 Yes ➤
 340 No

Method	Quantity (tonnes)
341	342

3.4 If you owned or leased a landfill, did it receive bottom ash from municipal solid waste or sewage sludge incineration?

343 Yes ➤
 344 No

Quantity (tonnes)
345

3.5 Did your jurisdiction own or lease a refuse derived fuel manufacturing facility?

346 Yes ➤ How many tonnes of waste did you convert to fuel?
 347 No

Quantity of waste (tonnes)
348

Imports of Waste

3.6 Did other jurisdictions dispose of their waste in your disposal facilities?

349 Yes 350 No ➤ Skip to Section 4

 (please list them) 351

Check all that apply and indicate quantities disposed

- 352 Waste from other jurisdictions in your province/territory disposed in your facility
- 353 Waste from other provinces/territories disposed in your facility
- 354 Waste from other countries disposed in your facility

Quantity disposed (tonnes)
355
356
357

SECTION 4

Finance

4.1 Revenues for Waste Management Services Not Funded from Tax Revenues.

	Dollars
Revenues from utility bill payments (for waste management services)	401
Revenues from provision of waste management services to business on contract	402
Revenues from sale of recyclable materials	403
Revenues from tipping fees at disposal facilities	404
Royalties received for hosting a waste disposal facility	405
Other non-tax revenues for waste management (eg. sale of bag tags, other collection permits)	406

4.2 Operating Expenditures

(Include all operating and administrative expenditures related to waste management and do not net out revenue)

	In-house expenses (Dollars)	Payments to waste management firms (Dollars)	Payments to other governments (Dollars)
Collection and transport of waste, recyclables and organics	407	414	421
Tipping fees	408	415	422
Operation of disposal facilities	409	416	423
Operation of recycling facilities	410	417	424
Operation of organics processing facilities	411	418	425
Other	412	419	426
Total operating expenditures	413	420	427

4.3 Capital Expenditures

	Dollars
Collection	428
Disposal facilities	429
Recycling facilities	430
Organics processing facilities	431
Other	432
Total capital expenditure	433


Employment

4.4 Report the usual number of full-time (30 or more hours per week) and part-time (less than 30 hours per week) employees working in the waste management activities of your jurisdiction, according to their primary type of work

	Number of employees	
	Full-time	Part-time
Operations (e.g., drivers, waste collectors, mechanics, etc.)	434	438
Administration and management	435	439
Other (please specify) ⁴⁴²	436	440
Total	437	441

Certification

I certify that the information contained in this report is correct and complete to the best of my knowledge.

Signature 	Date Day Month Year <input type="text"/> <input type="text"/> <input type="text"/>
Name of person completing this report	Telephone <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Title of person completing this report	Fax <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	Email Address <input type="text"/>

Comments

If you have any questions, please contact us.
 Telephone (toll free) 1-800-255-7726
 Fax: 1-613-951-0709
 Email: enviro.oid.localgovt@statcan.ca

Please return this questionnaire in the envelope provided

Thank you for your cooperation !